

## **PREVENTING HEAT ILLNESS**

**1855**

(No. 42 May 2003)

The California Department of Forestry and Fire Protection (CAL FIRE) recognizes that its employees are subjected to working in various climates within the state at any time and within a short period of time. CAL FIRE's Heat Illness Prevention Plan – IIPP contains a written program that outlines the steps to take to reduce the exposure of employees to heat stress. The written program shall include Workplace Assessments, Periodic Medical Monitoring, Heat Stress Control Measures and Training of Employees, Supervisors and Managers.

### **DEFINITIONS**

**1855.1**

(No. 42 May 2003)

For the purpose of this section, "employee" shall refer to all individuals engaged in fire fighting, fire prevention and other activities (i.e. construction, resource management or road maintenance), where the individual has potential to be exposed to hazardous levels heat stress and where CAL FIRE has an employer-employee relationship.

For the purpose of this section, "Managers" and "Supervisors" shall refer to those individuals providing supervision to the employees indicated above.

"Acclimatization" means a temporary protective adjustment by the body's systems to heat exposure.

"Heat Illness" means a group of serious medical conditions resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion and heat stroke.

### **AUTHORITY/POLICY**

**1855.2**

(No. 42 May 2003)

The California Department of Industrial Relations, Division of Occupational Safety & Health, Special Order dated August 7, 1998 requires that CAL FIRE develop a written program to implement heat illness prevention policies and procedures.

**RESPONSIBILITY**  
(No. 42 May 2003)

**1855.3**

The Deputy Director of Fire Protection shall be responsible for implementing the Heat Illness Prevention Plan.

Managers and supervisors shall be responsible for the day-to-to day implementation of the Heat Illness Prevention Plan.

Employees shall be responsible for maintaining their level of awareness regarding heat prevention. This includes all items outlined in the following "Training" section.

**WORKPLACE ASSESSMENT**  
(No. 42 May 2003)

**1855.4**

Managers and supervisors shall make periodic assessments of work site locations to minimize the effects of exposure to heat stress. Assessments shall be made if it is the first time the employees have worked at that particular site; if climatic conditions change significantly; other environmental or physical conditions change (e.g., Personal Protection Equipment requirement); or if employee(s) exhibit signs or symptoms of heat related illness or heat illness occurs. Work site locations include fixed facilities, work projects, emergency related activities and special assignments. The following factors shall be assessed:

- Environmental conditions (temperature and relative humidity)
- Physical load imposed by Personal Protective Clothing and Equipment (PPE)
- Level and duration of work
- Exposure to radiant and conductive heat
- Work/rest cycles
- Rest areas
- Personal adaptation (acclimatization)
- Availability of potable water

**MEASURES TO PREVENT HEAT ILLNESS**  
(No. 42 May 2003)

**1855.5**

Managers and supervisors shall utilize appropriate control measures to prevent and/or minimize excessive heat exposures. The following control measures shall be implemented:

- Aerobic fitness
- Acclimatization
- Hydration
- Rest breaks
- Personal monitoring
- Personal protective equipment

## **AEROBIC FITNESS**

**1855.5.1**

(No. 42 May 2003)

All employees designated in [Section 1836](#) shall participate in an aerobic fitness program. Employees shall be responsible for documenting their workplace physical fitness activities as required in [Section 1838](#). Managers and supervisor shall monitor employees' Physical Fitness Logs ([IIPP-11](#)) to ensure that the employees are participating in training to increase their aerobic fitness level and heat stress tolerance. Employees shall be provided the opportunity for training during normal working hours, per their Bargaining Unit MOU, to undertake activities that will increase aerobic fitness and heat tolerance such as running, stationary cycling or other approved activity.

## **ACCLIMATIZATION**

**1855.5.  
2**

(No. 42 May 2003)

Acclimatization shall involve exposing employees to heat stress for progressively longer periods in preparation for work in a hot environment.

An employee's level of acclimatization shall be taken into account when making work assignments. Recognizing that it is not possible for all employees to be fully acclimatized for all emergency mobilizations, managers and supervisors shall take into account individual differences in regard to heat stress tolerance. This shall include recognizing the possibility of a reduced heat stress tolerance in employees who have recently arrived from a cooler environment.

## **HYDRATION**

**1855.5.3**

(No. 42 May 2003)

Water replacement is essential during prolonged strenuous work in the heat. During such work, it is common to lose one to two quarts of sweat an hour. These fluids must be replaced. Drinking water before working, while working and during breaks is the best way to prevent dehydration and replenish fluids.

Managers and supervisors shall be responsible for providing sufficient quantities of potable water prior to, during and after work in a heated environment. It is the employee's responsibility to remain hydrated.

Salt tablets are not to be taken.

## **REST BREAKS**

**1855.5.4**

(No. 42 May 2003)

Employees shall be provided adequate rest during the course of work, preferably in shaded areas. Non-emergency activities shall have a work/rest cycle that includes breaks in shaded areas and of sufficient duration to help lower core body temperatures. During shifts when there is no burn injury risk, crews shall be encouraged to open or remove Nomex shirts and over pants, allowing ventilation and evaporation of perspiration to reduce body heat. Hoods shall be worn folded and draped back over the neck.

## **PERSONAL MONITORING**

**1855.5.5**

(No. 42 May 2003)

Managers and supervisors shall ensure that employees can accurately monitor their heart rate as an assessment of core body temperature.

The protocol for obtaining recovery heart rate as a general assessment of core body temperature is as follows:

Count the radial pulse for 30 seconds at the beginning of the rest period – this is your initial heart rate (P<sub>1</sub>). If the heart rate exceeds 110 beats per minute, shorten the next work period by one third and maintain the same rest period.

The recovery heart rate can be checked by comparing the pulse rate taken at 30 seconds (P<sub>1</sub>) with the pulse rate taken at 2.5 minutes (P<sub>3</sub>) after the rest break starts. The two pulse rates can be interpreted using the Table below.

**TABLE 1. HEART RATE RECOVERY CRITERIA**

Heart rate recovery pattern	P <sub>3</sub>	Difference between P <sub>1</sub> and P <sub>3</sub>
Satisfactory recovery	<90	--
High recovery (Conditions may require further study)	90	10
No recovery (May indicate too much stress)	90	<10

## **PERSONAL PROTECTIVE CLOTHING AND EQUIPMENT**

**1855.5.6**

(No. 42 May 2003)

Employees shall be provided information during training on the physical impact and physiological stresses imposed on them by various types of PPE. Employees shall be allowed to loosen and/or remove PPE when they are safely away from flames or other hazards.

## **TRAINING**

**1855.6**

(No. 42 May 2003)

All employees shall be provided training on the following components of heat related illness:

- Prevention
- Causes
- Recognition of the signs and symptoms
- Potential outcome if signs and symptoms are ignored
- Appropriate levels of medical treatment for each level
- First-aid procedures
- Control measures outlined in [Section 1855.5](#)
- The effects on judgement and risk of employee injury from accidents
- Cardiovascular risk of heat stress
- Medical conditions that can increase risk
- Exogenous substances
- Environmental factors

Heat Illness training for new employees shall be provided as part of the employee's academy curriculum. Current employees shall receive in-service training during tailgate topic sessions. In-service training shall be performed at least two times per year, just prior to and during fire season. All components of the academy curriculum shall be included in the in-service training and all components of the academy curriculum shall be taught twice annually.

## **MEDICAL COMPONENTS/FACTORS**

**1855.7**

(No. 42 May 2003)

Managers, supervisors and Incident Commanders shall develop a local plan that facilitates rapid emergency medical response for heat related incidents.

Employees shall report to their supervisor immediately after recognizing symptoms of heat illness or heat illness-related injury in themselves or others. In addition to the CAL FIRE-3067, Employer's Report of Occupational Injury or Illness, a [Heat Stress CAL FIRE-3067A](#) form shall be used when heat stress occurs, either as a primary or contributing factor in the injury/illness. Completion of the [CAL FIRE-3067](#) and CAL FIRE-3067A shall be completed and processed as described in [1700 Health and Safety Procedures Manual, Sections 1710-1714](#).

Managers and supervisors shall review the return to work clearance from a physician after an employee's absence resulting from a heat related illness. If the clearance does not address heat stress factors, the manager, supervisor or a designee shall telephone the physician to inquire whether the physician considered heat stress factors.

## **USE OF INFORMATION**

**1855.7.1**

(No. 42 May 2003)

The information provided is considered confidential and the completed form must be treated accordingly.

Occupational Health & Safety Programs (OSHPros) shall maintain a confidential database with information identified on this form to determine trends and causes. The information shall be analyzed to assist managers and supervisors in heat stress management. Additionally, it will provide a mechanism to develop training curriculum and safety information to minimize the risk and exposure to heat-related illness.

## **PERIODIC MEDICAL EXAMINATIONS**

**1855.8**

(No. 42 May 2003)

Employees shall complete the Emergency Medical Questionnaire (EMQ) annually and prior to the employee's periodic Respiratory Protection Program examination for review by the Department's medical consultant. The Medical Consultant shall assess risk factors specific to the employee that may affect the employee's ability to tolerate heat stress exposure. The physical examination shall also include a history of heat related illnesses suffered by the employee which may indicate difficulty in achieving adequate acclimatization.

## **COMPLIANCE**

**1855.9**

(No. 42 May 2003)

Managers, supervisors and employees are responsible for maintaining their own physical fitness regimen that assists them in performing the various arduous tasks anywhere, at any time within the State, and possible outside of California.

Documentation of physical fitness training, pulse rate recovery measurements, and the other training listed above is required ([IIPP-11](#) Physical Fitness Log). The employee's immediate supervisor or designee shall make periodic audits of employee physical fitness activities. The audit shall be documented and the record maintained in the employee's personnel file.

## **INVESTIGATIONS**

**1855.10**

(No. 42 May 2003)

In the event that a heat related injury or illness occurs and is serious, a formal investigation, per Handbook [Section 1715 and 1716](#), shall be conducted. CAL FIRE's medical consultant shall be contacted within one hour of a known heat related serious injury.

## **RECORD KEEPING**

**1855.11**

(No. 42 May 2003)

All employees shall utilize CAL FIRE's Physical Fitness Log (IIPP-11). The log shall be submitted at the end of each month or pay period with the employees' timesheets. The log shall be filed in the employees' personnel file at their assigned work location.

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[\(see Forms or Forms Samples\)](#)